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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/579,520

05/15/2006

Raymond De Callafon

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24978 7590 10/30/2008

GREER, BURNS & CRAIN  
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CHICAGO, IL 60606

EXAMINER

MEI, XU

ART UNIT

PAPER NUMBER

2614

MAIL DATE

DELIVERY MODE

10/30/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/579,520	<b>Applicant(s)</b> DE CALLAFON, RAYMOND	
	<b>Examiner</b> Xu Mei	<b>Art Unit</b> 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-27 is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 8, 11-16, 18 and 19 is/are rejected.
- 7) ☒ Claim(s) 6, 9, 10, 17, 20 and 21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/15/06, 3/16/07, 4/4/07</u> .                                | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. This communication is responsive to the applicant's application filed 05/15/2006.

#### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 8, 11-14 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Eguchi (US-5,278,780).

Regarding Claim 1, Eguchi discloses an active noise control apparatus (Figure 1) for reducing noise from noise source (1), comprising: a first detector (3) for detecting noise produced by the noise source; a generalized finite impulse response filter (6) for receiving noise signals of the detected noise from said first detector, and generating control signals for reducing the noise from the noise sources (y); and a sound generator (5) for producing sound based on said control signals from said generalized FIR filter substantially canceling the noise from the noise source.

Regarding Claim 2, Eguchi further discloses said generalized FIR filter is a feedforward compensator (Figure 1).

Regarding Claim 3, Eguchi further discloses said first detector (3) is located downstream of the noise source (1), and said sound generator (5) is located downstream of said first detector.

Regarding Claim 8, Eguchi further discloses a second detector (4) for detecting noise down stream of said sound generator.

Regarding Claim 11, Eguchi further discloses the first detector and second detector are microphones, and said sound generator is a speaker (Col. 7, lines 46-54).

Regarding claim 12, Eguchi discloses a method for reducing noise from a noise source in an active noise control system, comprising: detecting first noise produced by the noise source (1); generating control signals (y) from a generalized finite impulse response filter (6) for reducing the first noise from the noise source based on a first signal of said detected noise; and producing sound (5) based on said control signals for substantially canceling said first noise from the noise source.

Regarding claim 13, Eguchi further discloses said generalized FIR filter is a feedforward compensator (Figure 1).

Regarding claim 14, Eguchi further discloses said first noise (1) is detected by a microphone (3) located downstream of the noise source, and said sound is produced by a speaker (5) located downstream of said microphone.

Regarding claim 19, Eguchi further discloses detecting second noise (4) after said sound based on said control signals has been produced.

***Claim Rejections - 35 USC § 103***

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4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4, 5, 7, 15, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi in view of Heuberger et al (A Generalized Orthonormal Basis for Linear Dynamical System, IEEE Transactions on Automatic Control, Vol. 40, No 3, pp. 451-465).

Regarding Claims 4 and 15, Eguchi discloses an apparatus as stated apropos of claim 1 and 12. Heuberger et al. discloses an FIR transfer function in a form as claimed (pg. 459, Col. 2, line 34) described by an orthonormal basis, direct feed through term, and optimal filter coefficients. It would have been obvious to one of ordinary skill in the art to modify the FIR filter of the active noise control apparatus and method of Eguchi by an orthonormal basis, as shown by Heuberger et al, in order to generate optimal filter coefficients for the FIR filter to improve accuracy of active noise control for the active noise control apparatus.

Regarding Claim 5 and 16, Heuberger et al. further discloses constructing functions based on recursive equations (Pg. 456, Col. 1).

Regarding Claims 7 and 18, Heuberger et al. further discloses identifying coefficients through a least-squares routine (Pg. 452, Col. 1).

***Allowable Subject Matter***

6. Claims 6, 17, 9-10 and 20-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 6 and 17, the prior art does not teach or fairly suggest function  $f_k(q)$  is initialized by a predetermined dynamical model that includes initial approximate information dynamics of the FIR filter.

Regarding claims 9, 10, 20, and 21, the prior art does not teach or fairly suggest a signal of the noise detected by the second detector is described by the equation as claimed.

7. Claims 22-27 are allowed over prior art of record, the prior art does not teach or fairly suggest a control signal generated based on the equation as claimed.

***Conclusion***

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**IMPORTANT NOTICE**  
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The Group and/or Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to **Group**  
**Art Unit 2614.**

Art Unit: 2614

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xu Mei whose telephone number is 571-272-7523. The examiner can normally be reached on maxi flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Xu Mei/  
Primary Examiner, Art Unit 2614  
10/16/2008